

2013

Insights into readmission rates of atrial fibrillation patients referred to BRIDGE

Thomas Vasko

Follow this and additional works at: <https://commons.emich.edu/honors>



Part of the [Nursing Commons](#)

Recommended Citation

Vasko, Thomas, "Insights into readmission rates of atrial fibrillation patients referred to BRIDGE" (2013).
Senior Honors Theses & Projects. 372.
<https://commons.emich.edu/honors/372>

This Open Access Senior Honors Thesis is brought to you for free and open access by the Honors College at DigitalCommons@EMU. It has been accepted for inclusion in Senior Honors Theses & Projects by an authorized administrator of DigitalCommons@EMU. For more information, please contact lib-ir@emich.edu.

Insights into readmission rates of atrial fibrillation patients referred to BRIDGE

Abstract

Purpose and Background

Heart disease is the leading cause of death in the U.S. and costs and estimated \$6 to \$26 billion annually largely due to hospitalizations. Bridging the Discharge Gap Effectively (BRIDGE) is an NP-driven transitional care program for cardiovascular patients. BRIDGE has demonstrated lower rates of readmission for patients with acute coronary syndrome who participated but not for atrial fibrillation (Afib) patients. We sought to assess differences between Afib patients who participated in the BRIDGE program and those who did not.

Conceptual Framework

The BRIDGE program is based on the Bumpus Integrated Client-Focused Transitional Care Model that posits that there exists a dynamic relationship between systems and clinicians that simultaneously influences individual behaviors and health outcomes.

Methods

This was a retrospective study of all patients referred to BRIDGE with a primary discharge diagnosis of Afib. Equal numbers of BRIDGE attendees were randomly matched to non-attendees. Uni-variate techniques were used to compare groups.

Results and interpretation of results

Of 148 Afib patients referred to BRIDGE, 84 (56.8%) attended BRIDGE, 36 (24.3%) saw cardiologists or primary care providers and 28 (18.9%) saw other providers or were unknown. There was no significant difference in median time to follow up. In total 17 (11.5%) patients were readmitted within 30 days. Non-attendees were more likely (71.4%) to be readmitted with afib/related diagnoses whereas attendees were less likely (40%). There was no significant differences in incidence of comorbid CAD, HTN, CHF or vascular disease between groups. However, of patients readmitted there was a trend toward BRIDGE attendees having more comorbidities.

Conclusion

This study helps us to better understand readmission patterns of Afib patients. While there was no difference in readmission rates between groups, patients who were readmitted from BRIDGE had more comorbid conditions and were often readmitted for non-Afib conditions while those readmitted by cardiologists had fewer comorbidities but were more often readmitted with Afib/related issues. A larger sample is needed to better understand this dichotomy and to determine what measures can be taken to enhance the BRIDGE program for Afib patients.

Degree Type

Open Access Senior Honors Thesis

Department

Nursing

First Advisor

Sherry Bumpus

Keywords

Readmissions, Afib, transitional care

Subject Categories

Nursing

INSIGHTS INTO READMISSION RATES OF ATRIAL FIBRILLATION PATIENTS

REFERRED TO BRIDGE

By

Thomas Vasko and Sherry Bumpus (faculty mentor)

A Senior Thesis Submitted to the

Eastern Michigan University

Honors College

in Partial Fulfillment of the Requirements for Graduation

with Honors in Nursing

Approved at Ypsilanti, Michigan, on this date December 17, 2013

Insights into Readmission Rates of Atrial Fibrillation Patients Referred to BRIDGE

Thomas Vasko and Sherry Bumpus

Eastern Michigan University

Authors Note

This work was done during a summer research fellowship with the Michigan Cardiovascular Outcomes Research and Reporting Program (MCORRP) and is part of an ongoing study of the effectiveness of the Bridging the Discharge Gap Effectively (BRIDGE) program at the University of Michigan Health System, Department of Preventative Cardiology.

Table of Contents

Abstract.....	3
Insights into Readmission Rates of Atrial Fibrillation Patients Referred to BRIDGE.....	5
Background.....	6
Methods	9
BRIDGE.....	9
Atrial Fibrillation Study Population.....	10
Data Analysis	10
Results.....	11
Discussion.....	12
Limitations	14
Conclusion	15
Figure 1. Patient flow diagram	16
Figure 2. Reasons for early (< 30 days) readmissions.....	16
Table 1. Median Time (in days) from Discharge to Follow-up n=72.....	17
Table 2. Differences in Comorbidity Patterns by BRIDGE Attendance.....	17
References.....	18
Appendix A.....	20

Abstract

Purpose and Background

Heart disease is the leading cause of death in the U.S and costs an estimated \$6 to \$26 billion annually; largely due to hospitalizations. Bridging the Discharge Gap Effectively (BRIDGE) is an NP-driven transitional care program for cardiovascular patients. BRIDGE has demonstrated lower rates of readmission for patients with acute coronary syndrome who participated but not for atrial fibrillation (Afib) patients. We sought to assess differences between Afib patients who participated in the BRIDGE program and those who did not.

Conceptual Framework

The BRIDGE program is based on the Bumpus Integrated Client-Focused Transitional Care Model that posits that there exists a dynamic relationship between systems and clinicians that simultaneously influences individual behaviors and health outcomes.

Methods

This was a retrospective study of all patients referred to BRIDGE with a primary discharge diagnosis of Afib. Equal numbers of BRIDGE attendees were randomly matched to non-attendees. Univariate techniques were used to compare groups.

Results and interpretation of results

Of 148 Afib patients referred to BRIDGE, 84 (56.8%) attended BRIDGE, 36 (24.3%) saw cardiologists or primary care providers and 28 (18.9%) saw other providers or were unknown. There was no significant difference in median time to follow up. In total 17 (11.5%) patients were readmitted within 30 days. Non-attendees were more likely (71.4%) to be readmitted with afib/related diagnoses whereas attendees were less likely (40%). There were no significant differences in incidence of comorbid CAD, HTN, CHF or vascular disease between groups.

However, of patients readmitted there was a trend toward BRIDGE attendees having more comorbidities.

Conclusion

This study helps us to better understand readmission patterns of Afib patients. While there was no difference in readmission rates between groups, patients who were readmitted from BRIDGE had more comorbid conditions and were often readmitted for non-Afib conditions while those readmitted by cardiologists had fewer comorbidities but were more often readmitted with Afib/related issues. A larger sample is needed to better understand this dichotomy and to determine what measures can be taken to enhance the BRIDGE program for Afib patients.

Insights into Readmission Rates of Atrial Fibrillation Patients Referred to BRIDGE

In a time of escalating health care costs and American families struggling with insurance premiums and access to quality healthcare, alternative means to improve well-being are being sought. Practitioners across the United States are analyzing and innovating solutions to lower costs and improve patient outcomes. Focus on lowering readmission rates; improving patient outcomes and containing controllable costs are driving attention to conditions such as Atrial Fibrillation (afib). Afib affects more than 2.5 million adults in the United States and is predicted to more than double over the next 40 years. Afib is associated with significant cardiovascular morbidity and mortality, and is responsible for more than \$15.7 billion annually in Medicare costs due to disease complications (Eisenhart, 2009). Further, Medicare has estimated that of the \$17 billion per year spent on readmissions as much as \$12 billion is avoidable (Eisenhart, 2009).

In June 2008 the Medicare Payment Advisory Commission (MedPAC) proposed to Congress that hospitals must publish their risk-adjusted readmission rates and further established payment incentives to reduce these rates (Jencks, 2009). Additionally, complementary changes in payment rates were recommended such that hospitals with high risk-adjusted rates of readmission would receive lower average per case reimbursement. With the consistent rise of Afib cases and readmission rates coupled by the lack of national guidelines the University of Michigan Cardiovascular Center decided to address this complex concern.

Leading health care research groups such as the Michigan Cardiovascular Outcomes Research and Reporting Program (M-CORRP) have been designing, monitoring, reporting, and shaping health care outcomes for cardiovascular patients for more than a decade. One such program is “Bridging the Discharge Gap Effectively” (BRIDGE). This is a nurse practitioner (NP)-led program aimed to provide prompt, post-discharge, transitional care for patients who

experienced a cardiovascular event. Typically, transitional care for cardiac patients, when available, has been the role of a primary care physician or cardiologist. Yet, in the current climate, timely post discharge follow-up with these providers is often not available. Advanced practice nurses in a designated role to provide guideline-based post-discharge follow-up care are ideally suited to manage the complex needs of these patients.

Background

Heart disease is the leading cause of death for both men and women, and each year nearly 1 out of 4 deaths are due to heart disease that translates to nearly 600,000 American deaths annually (Kochanek, Jiaquan, Murphy, Minino & Kung, 2011). Every 34 seconds someone has a heart attack and each minute a cardiovascular event claims life (Kochanek et al., 2011). While coronary disease (i.e. heart attacks) are the mostly well-publicized cardiac conditions, other conditions such as heart failure and arrhythmias also account for high proportions of comorbidity and mortality commonly associated with heart disease. Atrial fibrillation (afib) for example, affects roughly three million Americans and the prevalence of this is expected to double in the United States by 2050 (Johnson et al., 2013). Patients with this condition increase their stroke risk by five-fold (American Heart Association, 2013). Further, in the United States alone, annual afib-related healthcare costs have been estimated to range from \$6 billion to \$26 billion per year; largely due to hospitalizations (Johnson et al., 2013). In a study conducted by Kim et al. (2001) 12.5% of patients with chronic Afib and 10.1% of patients with newly diagnosed Afib were readmitted to a hospital within one year of discharge with a primary diagnosis of Afib.

Atrial Fibrillation (Afib) is an irregular and often rapid heart rate that commonly causes poor blood flow to the body. The heart's two small upper chambers known as the atria beat irregular in a quivering manner causing a pooling and stagnation of blood. Often patients are

unaware that they are in afib. But for many, they feel fatigued, short of breath, and palpitations. Though this condition can be tolerated well, afib predisposes individuals to developing blood clots in their atria (American Heart Association, 2013). As a result of this clotting potential afib patients are at a stroke five-fold increase risk for stroke. (American Heart Association, 2013). The increased stroke risk associated with afib is attributed to the tendency for clots break into pieces. If a clot is small enough, it goes unnoticed. Larger pieces of clots however, can get lodged in blood vessels supplying fresh oxygenated blood to the heart resulting in a heart attack or in the brain resulting in a stroke. While elderly or patients with concomitant morbidities such as heart failure, hypertension and diabetes are at increased risk for such complications (Eagle, 2011); all afib patients should be screened with a standardized risk assessment tool (i.e. CHADS2) (Mahmood, 2012). To reduce the threat of stroke, patients with an elevated risk should be initiated on antithrombotic therapy. Adequate anticoagulation concomitant with anti-arrhythmic therapy should not be overlooked (Eagle, 2011). Until recently the mainstay of antithrombotic therapy has been warfarin. Today a few more options are available. Traditional management with warfarin is fraught with risk as this medication decreases ones ability to form blood clots. This means that it is also more difficult for these patients to stop bleeding and places them at increased risk for trauma and hemorrhagic strokes. Currently there are no guidelines for post-discharge follow up of afib patients. "To ensure the best possible outcome, atrial fibrillation management should be individualized based on patient characteristics and comorbidities that could influence response to specific management approaches." (Eagle, 2011). Yet it is clear that timely post-discharge follow-up of afib patients is essential not only for assessment and management of afib or response to treatments for afib, but also for assessment and management of antithrombotic therapy and complications.

In 2007, within the University of Michigan Cardiovascular Center the BRIDGE program was born. A multi-disciplinary group of cardiologist and nurse practitioners were looking to address the readmission concerns by focusing in on the hospital-to-home transition. The program's mission was to provide, prompt, seamless care utilizing cardiology nurse practitioner (NP) services to all patients discharged after an acute cardiac event. Bridging the time gap from hospital discharge to first follow up appointment with a cardiologist or NP was focused upon. The main goals of BRIDGE were to promote compliance with evidence-based therapies, improve outcomes, and decrease readmissions.

At the University of Michigan Health System Nurse Practitioners (NP) have a proven track record of providing access to quality care where it is lacking, thus reducing costly readmissions, while improving health outcomes overall for patients with cardiovascular disease. In a study conducted by M CORRP, patients who were seen by BRIDGE for acute coronary syndrome (ACS) had significantly lower 30-day readmission rates compared to those who were not seen in the BRIDGE (8.5 versus 21.2 percent). In addition, BRIDGE patients had significantly lower 30-day emergency department visits than those who did not attend (13.

This study sought to determine the frequency with which afib patients were readmitted within the first 30 days after hospital discharge, reasons for these readmissions and differences in readmission patterns by provider type in an effort to characterize patterns of readmission. This study dissects the post-discharge course of atrial fibrillation (Afib) patients referred to BRIDGE and compares readmissions of those who attended BRIDGE to those who did not. In attempt to understand and recommend effective guidelines to lower readmission rates for Afib patients three variables were specifically examined in relation to readmission diagnosis, time to initial follow-up and comorbid conditions.

Methods

BRIDGE

Bridging the Discharge Gap Effectively is a retrospective outcomes registry of the preventative cardiology program. All patients discharged after a cardiac event are referred to the program if they do not have scheduled follow-up within 14 days of discharge. The BRIDGE program is a collaborative effort between multiple disciplines, including: nurse and administrative managers, schedulers, medical leadership, hospital attending physicians, medical residents and fellows, nurse practitioners, medical assistants, unit-based nurses, unit clerks, discharge planners and medical billers. BRIDGE is as a transitional care model wherein nurse practitioners (NPs) act as an extension of the inpatient care team. BRIDGE's primary directive is to provide prompt care to all patients discharged from a cardiology service or who required cardiology in-patient consultation until either their primary care physician or cardiologist resumes their care. The goals of the program are to decrease the time to follow up, to decrease readmissions and ED visits post-discharge, and to decrease overall healthcare costs by promoting evidence-based therapeutics, educating patients and families, scheduling follow-up tests and referring patients for other services as needed.

The BRIDGE Registry is maintained by M-CORRP, and utilizes the Drupal® web-based registry software. M-CORRP trained research assistants abstract data retrospectively from the electronic medical record and enter it into the database. The data abstraction form includes variables for demographics, comorbidities, admission and discharge elements, treatments, and 6-month follow-up data (Figure 1). To assure that protected health information (PHI) remains confidential, patients are assigned a unique participant ID. To protect PHI electronically, Mcrypt AES_256 encryption (NSA Suite B Cryptography, 2009) is used. Further, though the Social Security Death index was queried for patients lost to follow-up, this was done at the time

of data abstraction and only the result of the query were documented. To ensure data quality the first ten cases for all trainees are dually abstracted and entered, a further 10% of all cases are randomly audited. Diagnostics are run on all data to identify duplicate cases and erroneous data (i.e. an appointment dates years after discharge or prior to discharge). The principal investigators resolved any discrepancies.

Atrial Fibrillation Study Population

For this study, all patients referred to BRIDGE with a primary discharge diagnosis of afib (n=148) were evaluated for inclusion in the study (see Figure 1 for the patient flow diagram). We next examined the distribution of patients who did not attend BRIDGE. Our target population for comparison are those patients who did not attend BRIDGE and whose first post-discharge visit was with a cardiologist or primary care provider. We then randomly selected the same number of patients from the attended BRIDGE population who participated during the same time period. These two groups served as the comparator groups for all analysis.

Data Analysis

Data were analyzed using PASW 18.0. All variables were assessed for compliance with statistical assumptions. Missing data were excluded from the sample. Independent student t-tests (continuous variables) and Chi Square (categorical variables) were used to compare groups. Pearson's Chi-square test for significance was reported except in cases where the expected count would violate an underlying assumption; in these cases, Fisher's Exact test was reported. The significance level was set at 0.05 for all analyses. The hospital readmission rate was calculated as the number of patients discharged from the hospital with a diagnosis of an afib event and readmitted to UMHS within 30 days, divided by the total number of people who were discharged alive with the same diagnosis. In order to isolate the BRIDGE effect, patients who were

readmitted or died prior to their initial BRIDGE appointment date were excluded. The BRIDGE and non-BRIDGE specific rates of readmission were calculated as the total number of readmissions for the BRIDGE and non-BRIDGE groups divided by the total number of subjects in each group. Only the first readmission following discharge for an afib event was counted. The patient was the unit of analysis.

Results

Of 148 Afib patients referred to BRIDGE, 84 (56.8%) attended their BRIDGE appointment and 64 (43.2%) did not attend. Mean age of attendees was (71.3) years, non-attendees (70.5) years ($p=.XX$); 41.7% of non attendees were male while 66.7 % ($n=24$) of attendees were male. The sample that attended was mostly Caucasian ($n=34$; $n=1$ African; American; $n=1$ Asian). Similarly, of those who did not attend 34 were Caucasian and 2 were African American. More than half of patients who did not attend had their first follow up with a Cardiologist/Primary Care Provider ($n=36$, 56.2%), 14.1% ($n=9$) with other Specialist and 29.7% ($n=19$) were seen outside the institution or unknown (see Figure 1).

In order to ascertain the reasons for readmissions within 30 days of hospital discharge a retrospective chart audit for all cases was conducted. In total 17 (11.5%) patients discharged with a primary diagnosis of afib were readmitted within 30 days of hospital discharge (see Figure 2). Of those, 10 (11.9%) had participated in the BRIDGE program and 7 (10.9%) had not. More patients who had not attended BRIDGE were readmitted with afib or related diagnoses such as elevated INR, digoxin toxicity, and cerebral vascular incidents (71.4% versus 40%) whereas those attended were more likely to be readmitted for non-afib related conditions such as atypical chest pain (60%).

We also sought to measure the difference in how soon patients were seen after discharge (see Table 1). Median length of time from discharge to follow up for the entire population was not significant. However looking at those readmitted in <30 we see a week difference in days from discharge to first follow up between those who attended BRIDGE and those who did not attend. Patients were excluded if they were readmitted before their initial follow up. Because, the sample size was small for the outcome of readmission no tests for significance were done.

Lastly we analyzed our population comparing patient comorbidities (see Table 2). No significance differences. However, of patients readmitted in <30 there is consistently a higher rate of comorbidities such as coronary artery disease, hypertension, congestive heart failure and vascular disease. Again the sample size is too small to determine association.

Discussion

The general medicine cardiology BRIDGE program has a proven track record for reducing hospital readmissions within 30 days of discharge for patients diagnosed with acute coronary syndrome (Bumpus, 2012). Yet, BRIDGE has not shown the same success with patients diagnosed with afib (Bumpus, 2012). It is unclear why this is so. Within this study we sought to describe and explain some of the differences between patients who participated in the BRIDGE program and those who had usual care follow-up with a cardiologist or primary care provider within the same time frame. Specifically, we compared readmission diagnoses, time to follow-up and readmission and comorbidity patterns between these two groups. We found that BRIDGE providers had more early readmissions for conditions unrelated to afib and that cardiologists and primary care providers had more early readmissions for afib and afib related sequelae. It appears that patients who attend BRIDGE NPs are more likely to also be more complex and potentially sicker afib patients than those seen by a cardiologist or primary care

practitioner initially after discharge. On the other hand, it is possible that the BRIDGE NPs are highly specialized cardiology experts and potentially have a lower threshold for admitting patients with diagnose other than Afib. Where as, cardiologist and other medical practitioners are more experienced or comfortable managing or referring patients with other issues. It is also important to state when the patients are seen post-discharge it may impact the types of conditions seen by both the NP and physician.

In considering these two possibilities above, we must also take into consideration that on average, patients seen outside of BRIDGE were also seen earlier than the 14 day post-discharge recommendation for BRIDGE. While the sample sizes are clearly too small to establish any significance, non-BRIDGE-attenders were seen 3 days sooner than BRIDGE attenders. Further, for those patients actually readmitted, non-attenders were seen a full week before those who attended the BRIDGE program. Further analysis is required to determine whether or not the patients managed by cardiologists were new to the cardiologist, or if they were established patients as this may also affect the provider's threshold for readmission. Ultimately, to better understand whether or not a relationship exists between when patients are seen and reasons for readmissions (i.e., afib, afib related, or unrelated) will require a larger sample.

One possible explanation is that when seen 5-13 days post discharge that is the ideal window to capture patients who have reverted back into afib, returned to an unsustainable heart rate, or who suffer from some afib-related complication. Hence, the higher percentage of afib and afib-related readmissions by the cardiologists and primary care providers. Conversely, when patients are not seen in the BRIDGE clinic until 12-17 days post-discharge those with afib or afib-related complications return to the emergency room or are readmitted (there were no deaths in this study sample) before their BRIDGE appointment. Therefore, the afib patients being seen in BRIDGE

are more stable (from an afib standpoint) and the readmissions come from the other cardiac conditions. It is important to note here, that we refer to appointments with their cardiologist or primary care provider as usual care and this is not entirely accurate. In fact, the reason the BRIDGE transitional care model was developed was in fact because neither cardiologist nor primary care physicians were able to see their patients post-discharge in a timely manner. At the onset of BRIDGE, typical cardiology and PCP follow-up was 20-60 days post-discharge (Bumpus, et al., 2010). So despite being referred to as usual care in this study, patients seen by their cardiologist or primary care provider in less than 14 days after discharge is in fact at minimum an enhanced usual care.

Within this study the identification of factors directly affecting outcome were uncovered. The possibility of varying readmission diagnoses and the length of time to the patients' first follow up appointment may indicate cause. For instance, on average Afib patients were readmitted at approximately two weeks, and non-attendees were seen approximately one week earlier. Finally we those readmitted in <30 days had a consistently higher rate of comorbidities such as coronary artery disease, hypertension, congestive heart failure and vascular disease which states that BRIDGE is potentially seeing more complex patients.

Limitations

From this study it could not be determined whether there is any difference in the care or management of Afib from delivered in comparison of the BRIDGE or the usual care model in part because the sample size was too small. Further, one common limitation of outcomes research is that results from this sample may not be generalizable to other populations given that the study takes place in a large Midwest academic health center. Lastly, given the time and financial constraints of this study, only a small (but randomized) selection of the BRIDGE

participants were retrospectively abstracted. If repeated, this study will have more power if there is a 2 or 3-to-1 matching between BRIDGE participants and usual care.

Conclusion

In conclusion, afib is serious cardiac health condition affecting millions of Americans with an increasing incidence. Afib is also a condition with a trend towards high readmissions. As such, it is imperative to develop a transitional care model appropriate to the needs of this group. Despite the BRIDGE program's success with ACS, BRIDGE has not achieved these same outcomes with the afib population. This study begins to shed light on some of the transitional care differences between the BRIDGE program and usual care as provided by cardiologists and primary care physicians. More work is needed in a larger sample to more fully understand these differences and to implement quality improvements targeted specifically at their needs, such as earlier follow-up. With these changes, BRIDGE may yet be a successful and also cost-effective model in the future.

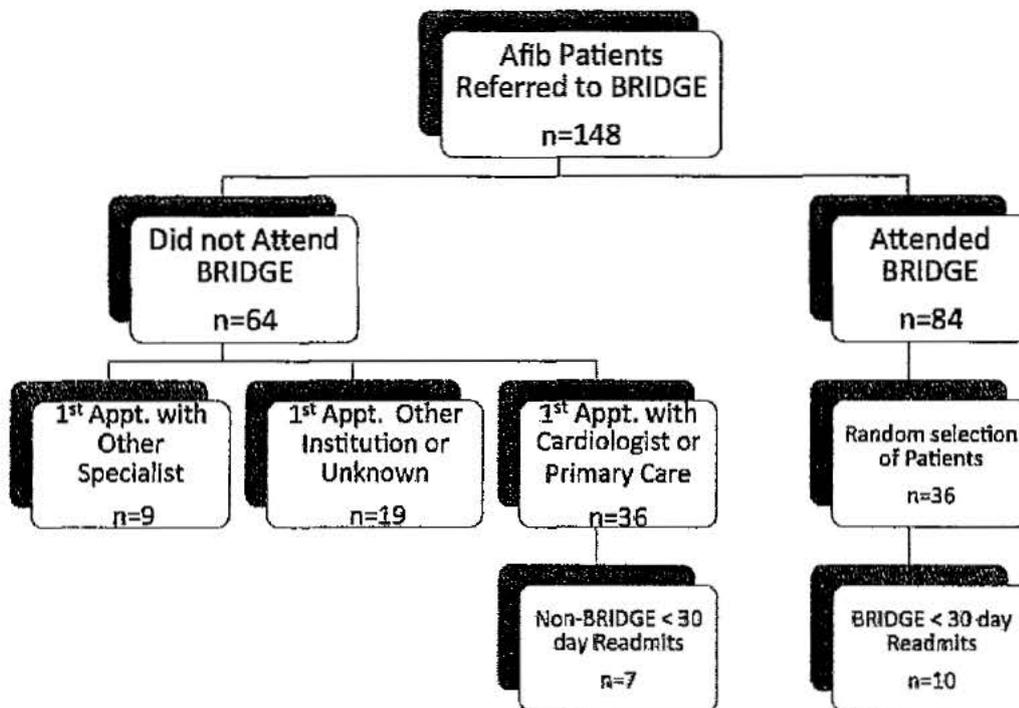


Figure 1. Patient flow diagram

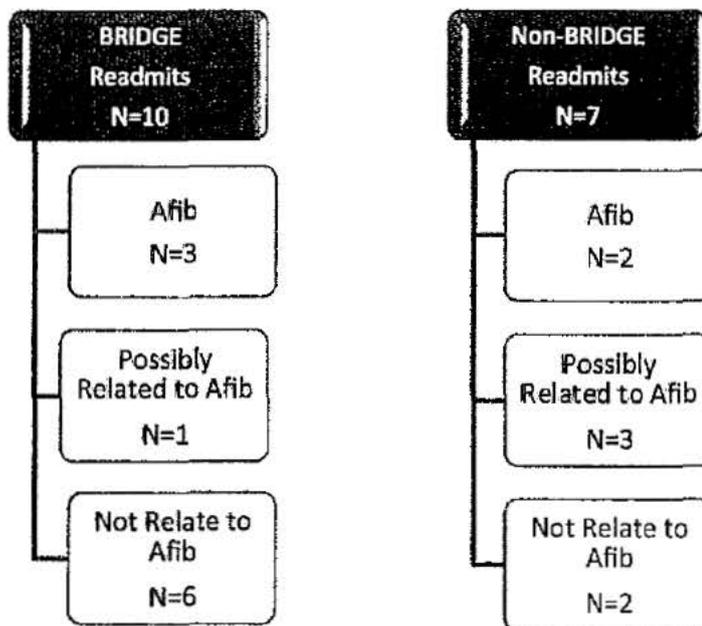


Figure 2. Reasons for early (< 30 days) readmissions.

Table 1. Median Time (in days) from Discharge to Follow-up n=72

	Attend (n=36)	Non-Attend (n=36)	p-value
Time from discharge to follow-up	12.5	9.0	0.503
Of Patients readmitted in < 30 days (n=13)			
	Attend (n=9)	Non-Attend (n=4)	
Time from discharge to 1 st follow-up	12	5.5	
Time from discharge to readmission	17	13	
Number seen only after readmission	1 (10%)	3 (42.9%)	

Table 2. Differences in Comorbidity Patterns by BRIDGE Attendance.

Entire Population n=72				
Comorbidity →	CAD	HTN	CHF	Vasc
Attend n=36	17 (47.2%)	25 (69.4%)	12 (33.3%)	9 (25.0%)
Non-Attend n=36	16 (44.4%)	20 (55.6%)	7 (19.4%)	4 (11.1%)
P-value	0.813	0.223	0.181	0.125
Of Patient Population Readmitted in < 30 days				
Comorbidity →	CAD	HTN	CHF	Vasc
Attend n=9	7 (70.0%)	7 (70.0%)	6 (60.0%)	5 (50.0%)
Non-Attend n=4	3 (42.9%)	2 (28.5%)	3 (28.5%)	1 (14.3%)
P-value	0.262	0.091	0.483	0.129

References

- American Heart Association. (n.d.). Retrieved from http://www.heart.org/HEARTORG/Conditions/Arrhythmia/AboutArrhythmia/What-is-Atrial-Fibrillation-AFib-or-AF_UCM_423748_Article.jsp.
- Bumpus, S. M. (2012). A novel approach to transitional care for acute coronary syndrome patients. Doctoral Dissertation, University of Michigan, Ann Arbor, MI.
- Bumpus, S., Klinc-Rogers, E., Kosteva, A., Smith, C., Montgomery, D., Eagle, K. A., Froehlich, J., Jackson, E. A., Rubenfire, M. (2011). A nurse based BRIDGE Transitional Care Model reduces readmission and ED visits. *Journal of the American College of Cardiology*, 57(14), E1182
- Cadot, J. (2011). AF & atrial flutter remain large cost burden in U.S. Retrieved October 30, 2013, from <http://www.cardiovascularbusiness.com/topics/electrophysiology-arrhythmia/hrs-af-atrial-flutter-remain-large-cost-burden-us?page=0%2C0>
- Eagle, K., Cannom, D., Garcia, D. (2011). Management of atrial fibrillation: translating clinical trial data into clinical practice. *The American Journal of Medicine*, 124(1), 4-14.
- Eisenhart, E. (2009). Medicare and atrial fibrillation / consequences in cost and care. Retrieved October 30, 2013 from <http://products.sanofi.us/resources/Medicare%20and%20AFib.pdf>
- Jencks, S., Williams, M., & Coleman, E. (2009). Rehospitalizations among patients in the Medicare fee-for-service program. *The New England Journal of Medicine*, 360(14), 1418-1428.
- Johnson, B. H., Smoyer-Tomic, K. E., Siu, K., Walker, D. R., Sander, S., Huse, D., Amin, A. (2013). Readmission among hospitalized patients with nonvalvular atrial fibrillation. *American Journal of Health-System Pharmacy*, 70(5), 414+. Retrieved

from http://go.galegroup.com/ps/i.do?id=GALE%7CA322481800&v=2.1&u=lom_emichu&it=r&p=AONE&sw=w&asid=4be3bfb2c0cf92411272528bb2e4394b

Kim MH, Johnston SS, Chu BC et al. (2011). Estimation of total incremental health care costs in patients with atrial fibrillation in the United States. *Circ Cardiovasc Qual Outcomes*. 2011; 4:313-20.

Kochanek, K. D., Jiaquan, X., Murphy, S. L., Minino, A. M., & Kung, H. (2011). Retrieved from website: http://www.cdc.gov/nchs/data/nvsr/nvsr60/nvsr60_03.pdf

Mahmood, R., Bumpus, S., Smith, C. A., Krishnan, S., Norville, J., Kline-Rogers, E., Froehlich, J., Eagle, K. A., Rubenfire, M. (2012). Bridging the Discharge Gap Effectively (BRIDGE): Follow-up results on the effect of the BRIDGE clinic transitional care model of preventing early readmissions and ED visits-6 month outcomes. *Journal of the American College of Cardiology*, 59(13, Supp A), A451

Appendix A

12/3/13

Insights into Readmission Rates of Atrial Fibrillation Patients Referred to BRIDGE



Thomas Vasko
Eastern Michigan University
School of Nursing
Honors College

MCORRP

Background

- AFib affects 2.7 - 6.1 million Americans
 - Associated with other cardiac complications. (AHA, 2013)
 - Increases the risk for stroke fivefold. (AHA, 2013)
- Presently, there are no guidelines regarding post-discharge follow-up.

MCORRP

12/3/13

Background

- Multiple studies, including BRIDGE, demonstrate the success of early post-discharge follow-up for ACS.
- However, with regard to Afib, patients who attended BRIDGE were more likely to be readmitted within 30 days (Mahmood, ACC 2013)

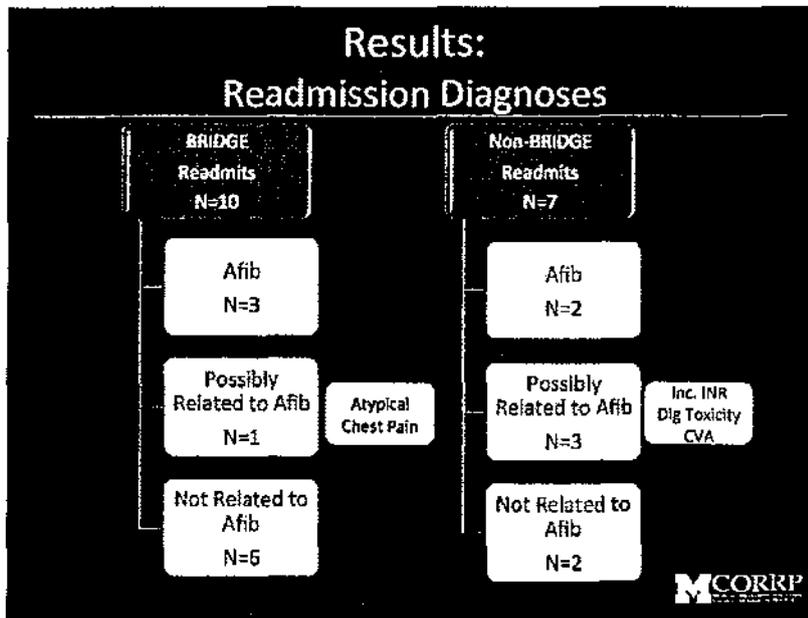
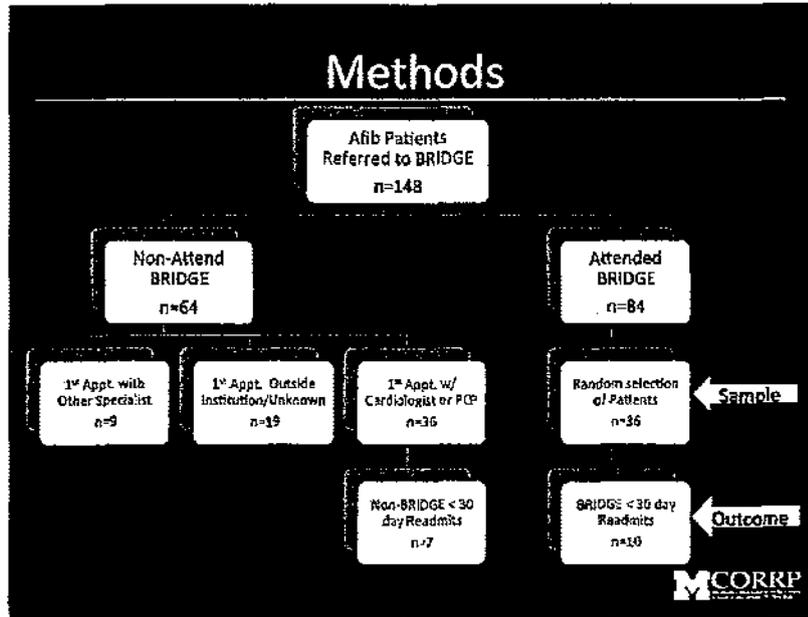


Objectives

1. To describe the post-discharge course of Afib patients who were referred to BRIDGE
2. To compare BRIDGE attendees to non-attendees by:
 - Readmission diagnoses.
 - Time to follow-up and readmission
 - Comorbidities



12/6/13



12/3/13

Results: Median Time to Follow-up and Readmission

Median Length from Discharge to First Follow-up n=72			
	Attend (n=36)	Non-Attend (n=36)	Significance
Length (days) from DC to first follow-up.	12.5	9.0	p=0.503

Of Patients Readmitted in < 30 days n=13		
	Attend (n=9)	Non-Attend (n=4)
Length (days) from DC to first follow-up	12	5.5
Length (days) from DC to readmission	17	13
Number seen after readmission	1 (10%)	3 (42.9%)



Results: Differences in Comorbidities

Entire Patient Population n=72				
Comorbidity	CAD	HTN	CHF	VASC
Attend (n = 36)	17 (47.20%)	25 (69.40%)	12 (33.30%)	9 (25.00%)
Non-Attend (n = 36)	16 (44.40%)	20 (55.60%)	7 (19.40%)	4 (11.10%)
p-value	0.813	0.223	0.181	0.125

Patients Readmitted in <30 Days				
Comorbidity	CAD	HTN	CHF	VASC
Attend (n = 10)	7 (70.00%)	7 (70.00%)	6 (60.00%)	5 (50.00%)
Non-Attend (n = 7)	3 (42.85%)	2 (28.50%)	3 (28.50%)	1 (14.28%)
p-value	0.262	0.091	0.483	0.129



12/3/13

Results: Differences in Comorbidity

Entire Patient Population n=72				
Comorbidity	CAD	HTN	CHF	VASC
Attend (n = 36)	17 (47.20%)	25 (69.40%)	12 (33.30%)	9 (25.00%)
Non-Attend (n = 36)	16 (44.40%)	20 (55.60%)	7 (19.40%)	4 (11.10%)
p-value	0.813	0.223	0.181	0.125

Patient Population Consisting of < 30 Day readmission				
Comorbidity	CAD	HTN	CHF	VASC
Attend (n = 10)	7 (70.00%)	7 (70.00%)	6 (60.00%)	5 (50.00%)
Non-Attend (n = 7)	3 (42.85%)	2 (28.50%)	3 (28.50%)	1 (14.28%)
p-value	0.262	0.091	0.483	0.129



- ### Discussion/Conclusions
- BRIDGE is known to reduce readmissions for ACS. It is unknown why Afib is different.
 - Possible reasons:
 - Varying types of readmission diagnoses
 - Length of time to follow up appt.
 - On average Afib patients were readmitted at approximately 2 weeks
 - Non-attendees were seen approximately 1 week earlier
 - Comorbidities
 - From this study it cannot be determined whether there is any difference in the care or management of AFib
- 

12/3/13

Limitations / Future Directions

- Improve limitation of sample size by utilizing all 84 patients who attended BRIDGE.
- Begin to understand why and if BRIDGE is seeing patients with more complex conditions.
- More closely evaluate the time course post-discharge and consider a RCT to determine whether 7 or 14 days is ideal follow-up for Afib patients.

